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THE PHYSICAL CARE OF RURAL SCHOOL CHILDREN.¹

By TALIAFERRO CLARK, Surgeon, United States Public Health Service.

An officer connected with the recruiting station of the United States Marine Corps, New York City, has been quoted in a recent publication² to the effect that only 316 of 11,012 applicants for enlistment in this branch of the public service were up to the required physical standard. Furthermore, it has been noted by observers in other countries that, in the case of volunteers for military service, rejections because of physical unfitness were in direct relation to the number of years spent in the school. Although it is not claimed that these observations hold true for all sections of the country, they do serve to draw attention to the fact that large numbers of individuals in the country have not attained the highest individual efficiency, and that the schools might be responsible in a measure for such lack of development. This is all the more evident when it is recalled that the greatest number of rejections for enlistment on account of physical defects were due to abnormalities of physical development, defective vision and hearing, heart disease, faulty teeth, and postural defects. These defects are in a large measure preventable, or at least controllable, depending upon their prompt recognition during childhood, the period in which so many of them have their origin. It is for this reason that the health supervision of school children is so necessary.

Intensive studies of rural school conditions conducted by the Public Health Service have revealed a special need of health supervision of rural school children because: (1) They constitute 60.7 per cent of the total school enrollment of the country; (2) they are largely denied the medical attention of specialists such as may be had in hospitals and clinics in cities; (3) they can not be protected en masse by health laws as is the case in urban communities; and (4) they are more unduly affected by endemic diseases which diminish vital resistance and exercise an injurious influence on physical and mental development, such as malaria, hookworm, and pellagra.

The needs indicated for the physical care of rural school children are quite plain. The first of these is to increase vital resistance through measures designed to promote physical development. A large proportion of the hampering physical defects observed in later life had their origin in childhood, at a period when their early recognition gives greatest hope of correction. Before these conditions can be recognized and corrected, however, it must be known how the child grows, what are the laws governing physical development, what

¹ Read before the Section on Children, National Conference of Charities and Correction, Indianapolis, Ind., May 15, 1916.

² Physical Preparedness. George J. Fisher, M. D.

are the physical averages of the sexes for the different age periods, and how these averages are modified by racial and environmental influences in different communities. Finally, the school itself should be made a place in which the healthy child may grow in a normal manner, and where the best development of the weakened child may be secured. In this connection we have recently compiled the physical averages obtained during an intensive survey by the Public Health Service of all the rural school children of Porter County, Ind. It was found that the relative physical development of boys and girls varied at different age periods. The greatest annual increase in height of the boys was between 9 and 10 years of age, 2.5 inches; between 14 and 15 years of age, 2.7 inches; and between 15 and 16 years of age, 2.5 inches. In the case of girls it was between 9 and 10 years of age, 2.7 inches; and between 12 and 13 years of age, 2.6 inches.

The greatest annual increase in weight of boys occurred between 15 and 16 years of age, 14.8 pounds, and in girls between 14 and 15 years of age, 10.7 pounds.

A marked decline in the rate of growth was shown by the physical measurements of girls at the 14 and 15 year age periods, which about corresponded to the time of the full establishment of the menstrual functions.

Variations in the growth of the child call for great expenditures of physical and mental energy at certain age periods. Great care must be exercised in the school at this time to maintain correct postures, provide suitable exercises and adapt the curriculum to the special needs of the child in order to secure the best physical development.

Compared with the records of children in most urban centers,¹ the boys of this county were below the average height at the 6 to 7, 7 to 8, 8 to 9, 11 to 13, 13 to 14, 15 to 16, and 16 to 17 year age periods. The girls were under mean height at the 12 to 13, 15 to 16, and 16 to 17 year age periods. The deficiency ranged from 0.7 to 2.3 per cent among boys and from 0.2 to 2.8 per cent among girls. The weight of boys was below the average at the 7 to 8, 9 to 10, 10 to 12, and 14 to 15 year age periods, and that of the girls at the 7 to 8, 12 to 13, 13 to 14, and 15 to 16 year age periods. The deficiency in weight varied from 0.2 to 5.9 per cent in boys and 0.6 to 8.9 per cent in girls.

The important consideration in connection with the under physical development observed in the rural school population of this county was to determine the cause. Malaria and hookworm are not present in this community; pellagra is unknown, and there is but a limited prevalence of tuberculosis and typhoid fever. These diseases, therefore, are eliminated as causative factors. On the other hand, our

¹ A Manual of the Diseases of Infants and Children. John Ruhrah, M. D.

observations tend to show that the habitual diet of these children was largely responsible. For example, the breakfast of 40 per cent of them was composed almost exclusively of carbohydrates, and but 60 per cent had a mixed diet of carbohydrates and proteids. Furthermore, 57 per cent used coffee, only 15 per cent drank milk, and 1.16 per cent did not habitually eat breakfast. The need is plain, therefore, for the general establishment of domestic-science classes in the schools and the teaching of food values and food preparation. The services of cooperative agencies could also be profitably employed for the purpose of extending this instruction to the home.

Furthermore, no suitable facilities for play were provided and no systematic physical exercises were practiced at any of the rural schools of the county. The beneficial influences of these on health and physical development are now matters of common experience. Their absence may account in part for the subnormal physical development of a number of these children.

Ranking in importance with measures intended to increase vital resistance through maintenance of the normal physical development of a school child, are those directed to the discovery and correction of physical defects. The relative frequency of physical defects among rural, as compared to urban, school children, according to our observation and the percentages given by Cornell,¹ are as follows:

	Rural.	Urban.
	<i>Per cent.</i>	<i>Per cent.</i>
Adenoids.....	11.5	12 to 21
Defective hearing.....	12.1	5
Defective teeth:		
6 to 14 years of age.....	68.5 to 31.2	
15 to 18 years of age.....	20.2 to 16.1	
Primary grades.....		50 to 75
Grammar grades.....		10 to 30
Diseased tonsils.....	15.4	6 to 12
Refractive errors requiring glasses.....	6.7	28

Physical defects among rural school children are potentially of more serious consequences than those among children in cities. This is due to the limited medical facilities in most rural districts and in part to poorly constructed and equipped school buildings. Many examples illustrative of this observation have come under our personal notice. Witness the case of a small child between 6 and 7 years of age who, figuratively speaking, was standing on the edge of a threatening volcano, so far as life was concerned, by reason of a neglected inflammation of the middle ear. The otoscope revealed a slit in a very congested ear drum through which pus was oozing in great quantity. Neglect of this condition leads to deafness and not infrequently to death. The parents of this child were unaware of its

¹ Health and Medical Inspection of School Children. Walter S. Cornell.

dangerous condition. Cases like this and many similar cases occurring in rural schools remain unrecognized through the lack of medical supervision until too late to prevent destructive changes.

The faulty illumination so frequently observed in rural schools is largely responsible for much of the impaired vision encountered. Recent measurement of the desk illumination of an eight-room school on a cloudy day showed that the illumination of more than half of the desks in a number of the classrooms was less than one-third of that demanded by the lowest minimum standard. The effect of such faulty illumination is to promote eyestrain and to increase nearsightedness. The illumination of these classrooms could have been doubled by the proper tinting of reflecting surfaces; but the school authorities were without competent advice in this important detail of school construction. The need of such advice is largely responsible for many of the undesirable features of rural school life.

Furthermore, a number of rural school children were badly in need of glasses and had never been refracted. The rural school child can not step around the corner to an eye clinic and secure the free services of a specialist. These children are frequently found wearing glasses entirely unsuited to them, as was a girl with one eye hyperopic and the other myopic, who was wearing a farsighted lens in front of the nearsighted eye.

The rural school child is greatly in need of instruction in the care of the teeth and in need of adequate dental service. This is shown by the fact that 49.3 per cent of the children had defective teeth, 21.1 per cent had two or more missing teeth, and only 16.9 per cent had dental attention. Furthermore, 14.4 per cent of these children never used a toothbrush, 58.2 per cent used one occasionally, and only 27.4 per cent used one daily. It is now well recognized that defective teeth are responsible for a number of the bodily ills which materially reduce physical efficiency. Due attention to the care of the teeth in childhood will prevent their early decay in later life. Our investigations have revealed the highest percentage of children with defective teeth among boys from the fifth to the eleventh year of age, and among girls from the fifth to the tenth year of age. The neglect thus evidenced is accounted for by the ignorance of so many parents of the necessity of preserving the deciduous teeth as long as possible.

We have collected data relative to the occurrence of communicable diseases among rural children while attending school. The compilation of this material has not yet been completed. Sufficient evidence has been adduced, however, to indicate that the school is a factor in the spread of these diseases in rural communities, due largely to the fact that the children of different families are rarely in intimate

contact except in school. An undue prevalence of these affections is measureably responsible for an increase in the number of children with impairment of the organs of special sense. The control of communicable diseases in rural communities is urgently demanded, not only in the interests of the general health, but also because they endanger vision and hearing.

The investigations of the Public Health Service show certain problems of rural school life which require special consideration. For example: What is the remedy for the conditions just enumerated? How can the physical efficiency be increased? How can hampering physical defects be avoided? How is the control of communicable diseases to be brought about? How is improvement in rural school construction to be secured? The answer is (1) by abolishing school districts and establishing a county unit of school administration; (2) by establishing an efficient system of health supervision of school children; (3) by consolidating rural schools.

Of these, measures for the health supervision of school children are of prime importance for educational purposes and the protection of health. Unfortunately, only a small part of the rural school population of the country enjoys the benefits of such supervision. For example, in States where the laws are mandatory for the medical inspection of rural schools only 39.8 per cent of the total school enrollment is in rural districts; where they are permissive, 60 per cent; and where inspection laws do not apply, 61.4 per cent.

There are several reasons for this state of affairs—(1) the lack of a proper appreciation of such measures in rural communities; (2) the scarcity of persons in rural districts who are properly qualified for this service; (3) the financial inability of a number of rural communities to maintain an independent medical inspection service.

The interest of rural communities in this matter can best be secured through intensive school surveys. The value of this procedure lies in the fact that, by calling attention to unsuspected physical defects in their children and school conditions requiring attention, the necessity of some form of health supervision is brought home to parents. We have had practical experience of the educational value of such investigations through reports of an increased number of children seeking relief following surveys of this character.

The medical inspection of schools in rural districts is accompanied by a serious handicap, due to the impossibility, under existing conditions, of securing the services of a person properly qualified for this position. The appointment of a local practitioner is, as a rule, barren of results. He is unable to devote his whole time to this work, while the jealousy and quiet opposition of other local practitioners frequently render his efforts nugatory.

The requirements of a medical inspector are: (1) He should devote his whole time to this service and not engage in private practice or other calling that would interfere with proper discharge of the duties of this position; (2) he should be skilled in medical diagnosis, able to refract children for glasses when necessary, and qualified to advise with and assist the family physician when it is so desired; (3) he should have a thorough understanding of the principles of hygiene and the ability to apply them to school purposes.

The restricted financial resources of most rural communities preclude the offering of a salary commensurate with the attainments of a desirable school inspector. This difficulty can be overcome, in great measure, by combining the duties of the school physician with those of the district and the county or local health officer, with a salary equivalent to the combined salaries of the two positions. By so doing it will be possible for these communities to secure the full-time services of a trained sanitarian for health work of which school inspection forms a part. The health of the school children is essentially a part of the larger problem of the health of the community as a whole.

The possibility of rural school consolidation for the protection of the health of the children is an important consideration in the adoption of this measure. The sanitary requirements of school constructions can more readily be secured in the larger buildings of this type and the child thereby placed in a more healthy school environment. Furthermore, the concentration of a larger number of children in one building offers greater opportunity and facility for health supervision than are afforded by one-room schools.

Lastly, no system of health supervision will be effective without the cooperation of the parents. This can be secured through the employment of tactful school nurses to do follow-up work. The practical application of the principles of sanitation by an efficient nurse in time of sickness will do much toward educating parents regarding measures for safeguarding the health of their children. In addition, the cooperation of social workers and the formation of civic leagues and of home and school improvement associations among rural school children tend to a better understanding of good citizenship and of the obligations of the individual to the community, which in time should bring about improved social conditions and an increased efficiency of the individual.